

# Impact of Education Investments for the Economic Growth in Sri Lanka

M.Y.G.V. Jayawardena<sup>1</sup>

## ***Abstract***

*Education plays a significant role in each and every country in the world. Every government focuses on creating strong human capital in the country. Therefore, government expenditure on education is one of the key fiscal policy variables that can influence economic growth in any country. As Sri Lanka is yet a developing country, these investments play a vital role on its development. This study aims to study the impact on education investments for the economic growth in Sri Lanka. This study is based on secondary data covering the period from 2010-2017. Gross Domestic Product which has used as the measurement of the economic development and government expenditure on education are the main variables in this study. The results from the linear regression model and correlation test revealed that government spends more than 50% of the GDP of Sri Lanka for the education and it has a long term positive impact on the economic development of the country. It has further identified that there is a positive correlation between the Gross Domestic Product and governments' investments on education in Sri Lanka.*

***Keywords: Economic Growth, Education, Government Expenditure, Gross Domestic Product***

## **1. Introduction**

Education is crucial for building a nation's human capital, and the government's investments in education reflects its priority in promoting human capital development. In fact, many empirical studies have shown that education provides positive returns to society as more education leads to higher productivity (Hanusheck & Woodsman, 2010). Human capital is an important driving force in an economy and it has defined as the knowledge, skills and competencies embodied in individuals that facilitate the creation of personal, social and economic well-being (Cummins, Sychology,

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<sup>1</sup> Department of Social Statistics, University of Kelaniya,  
yahamaleejayawardena@gmail.com

Niversity, Elbourne, & Ustralia, 2009). Numerous researchers have found that impact of investments on economic growth has a positive impact on economic development. As stated by (Halder & Mallik, 2010) human capital investment has a significant effect on economic growth in India. While human capital consists of both investments on health and education, Pleigt (2011) identified only higher education promotes growth in England. Among other developing countries, Sri Lanka is spending more and more investments for the education over the past few years when referring to Central bank reports in Sri Lanka.

Economic development is the process by which a nation improves the economic, political, and social well-being of its people. The term has been used frequently by economists, politicians, and others in the 20th and 21st centuries (Economic development, 2006). Economic development is measured by referring Gross Domestic Product (GDP) of the country. Several researchers have also used GDP in their researches as the measurement of economic development (Rathnayaka & Athukorala, 2010) (Mallick, Das, & Pradhan, 2016).

## **2. Research Objectives**

Sri Lankan government is investing much on education in each year and each and every country is investing on education which paves the way to achieve their development goals. According to central bank reports from 2010, there is a considerable growth on investments for education. Since only few studies have focused on this field of study the writer of this research, the main objective of this research is to “study the impact of education investments for economic development in Sri Lanka referring to past data of past few years from 2010.”

## **3. Review of Literature**

Recent studies have shown that government expenditures in education tend to increase the quality of education, and lead to better economic outcomes. Most of these studies have analysed the situation of developing countries which have attempted to stimulate the accumulation of human capital through public education expenditure (Jung & Thorbecke, 2001).

(Mankiw et al., 1992), by considering an extended Solow growth model, found a positive relationship between education and economic growth. (Barro and Lee, 1993)

investigated that there is a positive relation between education and economic growth by taking 129 countries as their sample. In contrast to such above positive relationship, some empirical studies explain that education and economic growth are not significantly related. Benhabib and Spigel (1994) found the expansion of human capital not significantly associated with the economic growth rate. Bils and Klenow (2000) viewed that it might be a positive correlation between education and economic growth, but the relationship between education and economic growth does not necessary explain the educational influence on the economic growth. As far as their views, both education and economic growth can be affected by the total factor productivity.

Kui (2006) investigated the causality and co-integration between education and domestic product in China, and the result shows that economic growth is the cause of higher education in China. The relationship between education and economic growth in Bangladesh has been analysed by using the multivariate causality during 1976 and 2003 (Islam et al, 2007). It shows the existence of bidirectional causality between education and growth rate in Bangladesh. (Huang et al., 2009) also analysed causality between economic growth and higher education in China from 1972 to 2007. The result shows that there is a long-term relationship between higher education and GDP of the nation. Pradhan (2009) studied the relationship between higher education and economic growth by using error correction model in India from 1951 to 2002. He found unidirectional causality between education and economic growth. The role of higher education in economic growth has been analysed by using Johansson Co-integration and Toda-Yamato causality approach in VAR analysis for Pakistan from 1972 to 2005 (Chaudhary et al., 2009). They found only unidirectional causality running from economic growth to higher education. Using Lucas's (1988) endogenous growth model, (Gutema and Mekonnen, 2004) analysed that the role of education had a significant and positive impact on economic growth in Sub-Saharan Africa. Another study by (Loening, 2004) found the effect of education on economic growth in Guatemala during 1951-2002. By using an error correction model, they found that better-educated labor has a positive and significant role in economic growth.

However, besides governments' expenditures' levels, also its composition is important. The economics literature of early intervention has demonstrated that early investments in education are more important than later investments. Carneiro and Heckman (2003) and Todd and Wolpin (2003) have modelled children's outcomes

(cognitive and non-cognitive) as the output of a production function in which inputs are supplied by families as well as by institutions, and child outcomes are largely determined early in life.

According to Mallick (2016) they have built up several functions to analyse the impact. Production function where output is a function of labor and capital, endogenous growth production function which includes total economic growth and government expenditures on education. The expenditure on education presents human capital formation which can make skilled labor force and an econometric model as follows;

Model 1. Econometric model

$$GDP_t = \alpha_1 + \beta_2 EXE_t + \varepsilon_t$$

Where:

$GDP_t$  = Gross Domestic Product in time

$EXE_t$  = Public expenditure in time

$\varepsilon_t$  = Error term

The parameter  $\alpha_1$  is the intercept term and  $\beta_2$  is the slope coefficients.

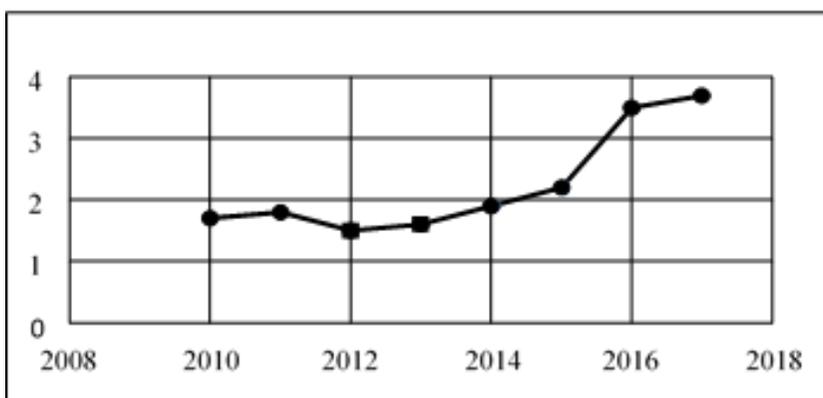
Source : Mallick et al., (2016)

### ***3.1. Education Investment and Economic Growth in Sri Lanka***

Rathnayaka and Athukorala (2010) have used time series data from 1960-2012 to identify the impact of human capital on economic growth in Sri Lanka and they have found that the short run impact of both government expenditure on university education and general education are significant, however, the magnitude of the coefficient of general education is greater than the university education. This is expected as the expenditure on university education in the country may have relatively stronger lag effects on economic growth. They have used regression models in the analysis. And they have used variables such as governments' total education on education, government education on university education, gross domestic capital formation, level of openness. The results show that both individuals and households benefit considerably from investment in education, and especially higher education (Aturupane, n.d.). They have used seven models for the analysis and they have

suggested that Sri Lanka needs to expand the flow of resources into the education sector, including higher education, to transform the education system into the foundation of a knowledge hub.

Figure 1. Government Expenditure on Education



Source : World Bank (2017)

According to the above chart, we can see that there is an upward trend in government expenditure on education over past 7 years. There was a considerable growth in the year 2016 and lowest expenditure marked in the year 2012 among these 7 years.

#### 4. Methodology

The data sources, key variables and the analyzing method will be explained in this section. Since, this study is focusing on finding the impact of education investments on economy, regression analysis and correlation test are the main statistical methods used in the analysis. The particular data has taken from Central Bank reports of Sri Lanka. The sample covers the data of the years from 2010-2017. According to the Central Bank reports they have mainly divided education section in to two which are private and government. Therefore, writer of this study decided to take the government related data for the study as this study only focuses on government

expenditure. Also writer has decided to use GDP (Gross Domestic Product) as the measurement of economic growth by reviewing literature (Mallick et al., 2016).

It is important to identify the main factors that effect for the government expenditure on education. According to the review of literature writer has decided to take GDP (Gross Domestic Product) and Total government expenditure on education for the regression analysis where GDP was treated as the dependent variable and total expenditure on education as the independent variable. Simple linear regression analysis which included with Pearson correlation, Overall model fit, ANOVA and parameter estimates were primarily used to determine the relationship between the dependent variable and independent variable. All of this analysis has done by using Statistical Package for Social Sciences software (SPSS).

Moreover, this study has used some other factors for the descriptive analysis such as number of government schools, teachers, students, undergraduates in universities and academic staff. These factors have been selected looking at the change over the years since these are the highly affected factors by the governments' expenditure on education. Simply, these factors would change with the governments' expenditure on education. The reason to omit the other factors and to limit these factors is that these factors have a considerable change over the years compared to other factors. Also the other reason is that some data such as non-academic staff and no of eligible to be admitted to universities are not available in older reports before 2013 although its available on the reports after 2013. Writer has first decided to include the number of graduates in the country as well. Since some reports include both basic and postgraduate degree graduates separately and some has only mentioned as no of graduates which seemed to be different, writer had to omit that from the list.

## **5. Data Analysis**

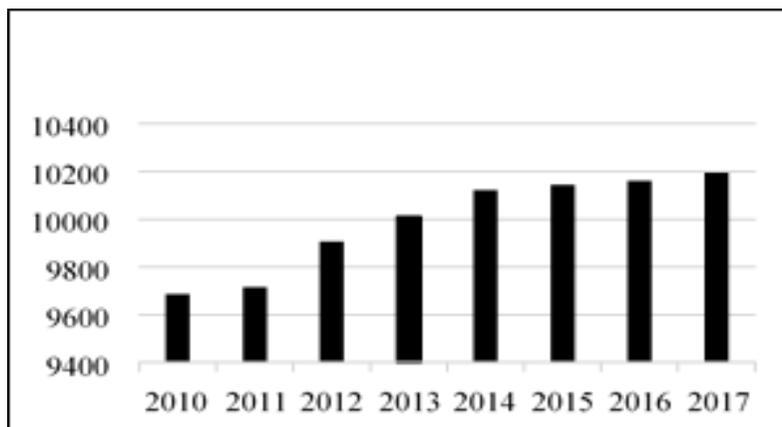
### ***5.1 Descriptive Statistics***

As mentioned in methodology, number of government schools, teachers, students, number of university undergraduates and lecturers are the factors used for the descriptive analysis as those are the factors highly affected by the governments' expenditure on education.

According to the figure 2, it can be seen that there is an increase of government schools over past 8 years. There were 9685 schools in 2010 and now it has increased

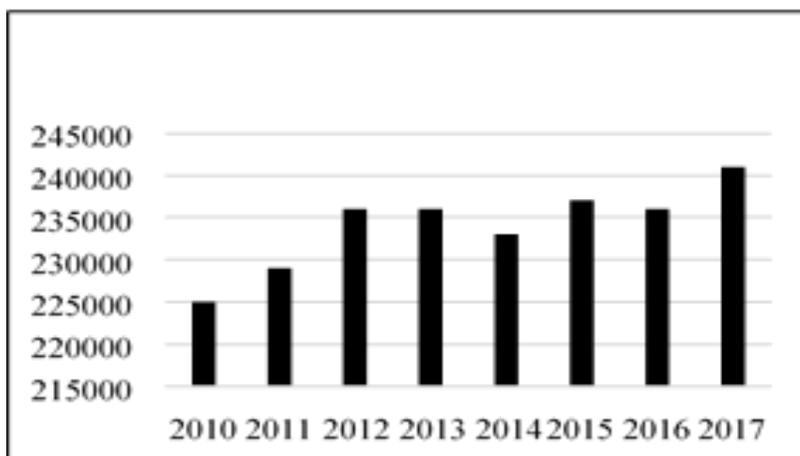
up to 10194 in 2017. Furthermore, this data depicts that government has spent more on 2012 which has a quiet big increase comparing to other years. Therefore, it is visible that government spent more and more for the school education over the years.

Figure 2. Number of Government Schools



Source : Central Bank, Sri Lanka (2017)

Figure 3. Number of Teachers

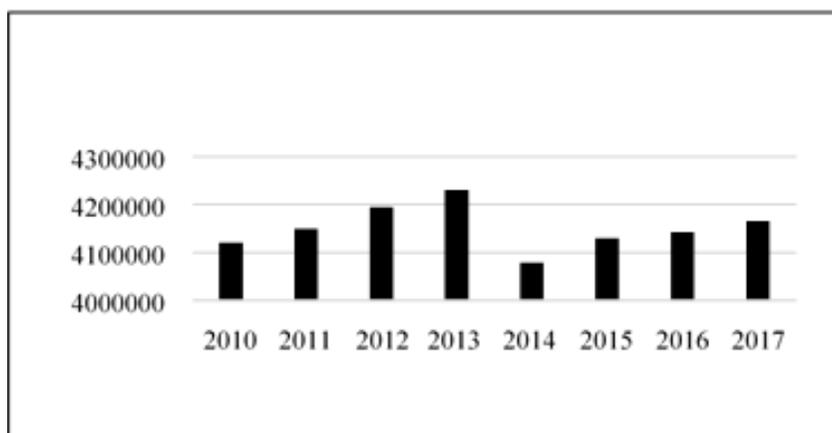


Source : Central Bank, Sri Lanka (2017)

Above figure 3 shows the change which has taken place in terms of the number of teachers in government schools. It also has a long term trend although there are few

ups and downs in some years. There is a considerable gap in growth from 2011-2012 compared to other years. In 2014 & 2016, it has reported that the number of students have been decreased from the number of previous year.

Figure 4. Number of Students Attend to Government Schools

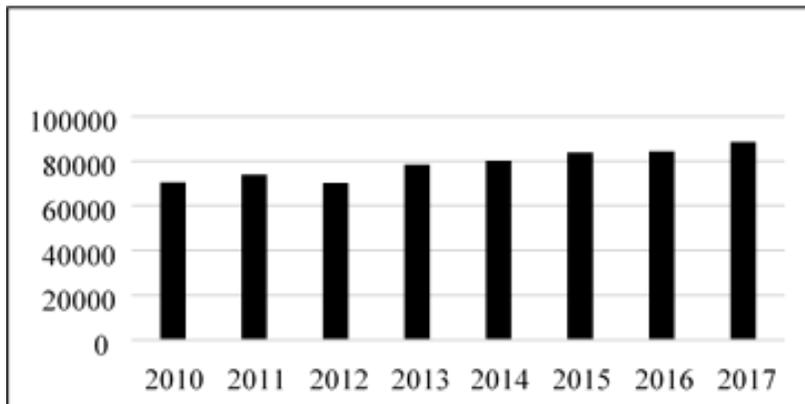


Source : Central Bank, Sri Lanka (2017)

As shown in figure 4 above, the overall direction has a different path compared to other factors. Because from 2010-2013 there has been a considerable growth and there has been a prolapse in 2014 where the number of students attended to government schools has decreased by 152,202. After 2014 the number of students attended to government schools has increased slowly up to 2017. Therefore, we can see that the number of students attended to government schools has increased in 2017 when comparing with the year 2010. But when the number in 2017 compared with 2013, we can see that there is a decrease in the number of students attended to government schools.

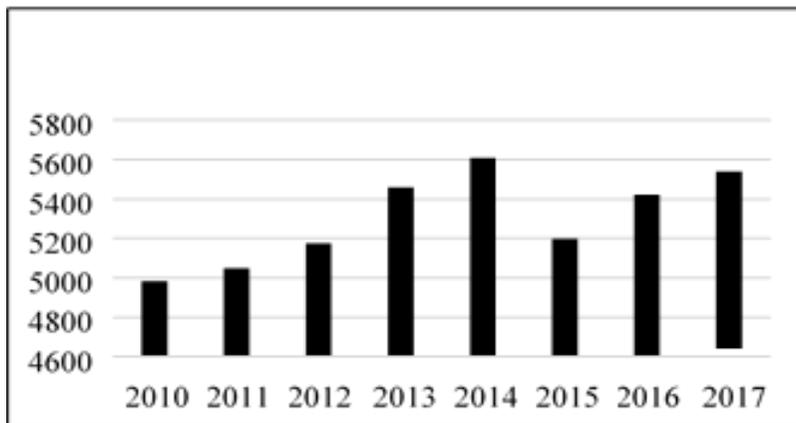
According to the data which has drawn in the above figure, it has an overall growth in the number of undergraduates in government universities in past 8 years. Although the number has a little decrease in 2012, it has gradually increased after that. Therefore, this data depicts that the education in Sri Lanka is in a good level as the number of undergraduates are increased over the years. Hence, the country is having more knowledge assets in the modern society compared to past.

Figure 5. Undergraduates



Source : Central Bank, Sri Lanka (2017)

Figure 6. Academic Staff in Universities



Source : Central Bank, Sri Lanka (2017)

This also has an overall growth in a different way which is same as Figure 4. Because the overall growth can be divided in to two groups which are 2010-2014 and 2015-2017. The continuous growth in the number of lecturers till 2014 has decreased in 2015 considerably. But after 2015 it has again started to increase the number of lecturers in government universities. Although there is an overall growth over last 8 years, the number of lecturers is now less than it was in 2014.

## 6. Results

The results of the table 1 can be explained in few ways. The  $R= 0.719$  shows the correlation between two factors used (GDP and government expenditure on education). Since it is more than 0.50, there is a positive correlation between the GDP of the country and the government expenditure on education.

The  $R\text{ square}= 0.517$  shows the percentage of which GDP can be explained by using the expenditure on education. Therefore, 51.7% of total variance in GDP has explained by the expenditure on education. According to that, we can see that more than half of GDP in the country is spending on education. Hence the rest of the percentage (48.3%) can be explained by other factors such as transportation, health etc.

Table 1. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
<b>1</b>	.719 <sup>a</sup>	.517	.436	7.5830
a. Predictors: (Constant), Government expenditure on education (% from GDP)				
b. Dependent Variable: GDP(US\$ billion)				

Source : Field Survey Data (2018)

The results of this table indicate whether the regression model predicts the dependent variable well. Since  $p=0.045$  which is less than 0.05, we can conclude that this model is statistically significant where is it predicting the GDP of the country well.

Table 2. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
<b>1</b>	Regression	368.861	1	368.861	6.415	.045 <sup>b</sup>
	Residual	345.008	6	57.501		
	Total	713.869	7			
a. Dependent Variable: GDP (US\$ billion)						
b. Predictors: (Constant), Government expenditure on education (% from GDP)						

Source : Field Survey Data (2018)

We can derive the regression equation using the data given in table 3.

Table 3. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. error	Beta		
<b>1</b>	(Constant)	55.509	7.856		7.065	.000
	Government expenditure on education (% from GDP)	8.359	3.300	.719	2.533	.045

a. Dependent Variable: GDP (US\$ billion)

Source : Field Survey Data (2018)

Therefore, the particular regression can be derived as follows:

$$\text{GDP} = 55.509 + 8.359 (\text{Government expenditure on education})$$

It also can be taken as,

$$Y - \text{GDP}$$

$$X1 - \text{Government expenditure on education}$$

$$U - \text{Error term}$$

$$Y = \beta_0 + \beta_1 X1 + U$$

$$\hat{Y} = 55.509 + 8.359 X1 + U$$

Moreover, we can see whether the intercept and the slope/gradient which is government expenditure/investment on education contribute to the GDP statistically significantly. When considering them individually, both of them are contributing statistically significantly as the P values are less than 0.05. ( $p-0.000 < 0.05$ ,  $p-0.045 < 0.05$ )

## 7. Conclusion

This study has made an attempt to uncover the relationship between economic growth and the expenditure on education from 2010-2017 in Sri Lanka. With the help of statistical test which has shown in previous section, the study finds that there is a positive relationship between two variables which has a long term trend. Therefore, it is clear that there is a significant impact from the expenditure on education on

economic growth of the country. The future research can be made with more descriptive variables that includes in total expenditure on education.

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